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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/283,169	04/01/99	LAWRENZ-STOLZ	J COHD-3252

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EXAMINER

SANGHAVI, H

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 09/15/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/283,169

Applicant(s)

Lawrenz-Stolz

Examiner

Hemang Sanghavi

Group Art Unit

2874



☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 10, 12, and 14-21 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 10, 12, and 14-21 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☒ received in Application No. (Series Code/Serial Number) 08/047,421.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

Art Unit: 2874

DETAILED ACTION

Drawings

This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed. Note the comments of the Office Draftsman on the attached form PTO-948.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10, 12, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over d' Auria et al (US 4,147,403; hereinafter Auria et al), Comerford et al (US 4,079,404), and Dakss et al (US 4,269,648).

Auria et al discloses an apparatus for coupling laser radiation from an array of laser diodes into a plurality of optical fibers corresponding in number to the number of laser diodes in the laser diode array, the apparatus further comprises an optical fiber lens as a cylindrical lens having the length of the linear laser diode array. The lens and the light entrance side of the optical fibers are aligned with the laser diodes for receiving radiation emitted therefrom

Art Unit: 2874

and focussing the received radiation into the plurality of optical fibers. See Fig. 5 and lines 32-54 of column 5.

Auria et al, as discussed above, fails to disclose the laser diodes as a laser diode array.

Comerford et al discloses an optical assembly comprising a semiconductor laser diode array structure having array of emitter regions; a plurality of optical fibers carrying light emitted from the laser through a cylindrical lens. See column 2. Such integral structure of plurality of laser diodes in an array form provides an efficient way to control each of the laser diodes in the array and reduces the cost of the device where the array lasers is being used.

Also, such laser diode array is readily available to the ordinary artisan.

From collective teachings of Comerford et al, the ordinary artisan would have found it to be obvious at the time of the invention to provide a laser diode array in the apparatus for Auria et al, for the purpose of advantageously reducing cost of the apparatus and efficiently coupling the laser diode array to the optical fibers.

Auria et al further fails to disclose the attaching of the cylindrical fiber lens to each of the optical fibers and method step of gluing the cylindrical lens onto the linear array of light entrance sides of the optical fibers.

However, Auria et al teaches that the lens must be carefully aligned with respect to the optical fibers and it is accomplished by gluing lens on to a substrate on which the optical fibers are disposed. It should be noted that the optical fibers about the cylindrical lens in a manner to center the lens on the light entrance ends to facilitate alignment.

Art Unit: 2874

Dakss et al, in a related art, discloses a method for mounting lens on an end of an optical fiber comprising the steps of attaching lens directly to an end of the optical fiber using a bead of glue in a manner to self center and align the lens with a laser source. The technique used in Dakss et al provides an efficient and easy of attaching the lens to the end of the fiber which does not require extensive aligning steps of adjusting the lens and the fiber to achieve maximum coupling of light. See column 1 for the drawback of the prior art techniques for attaching the lens to the end of the fiber and lines 55-66 of column 3 for the advantages of the disclosed technique in Dakss et al.

Thus, from desirability in the apparatus of Auria et al and collective teachings of Dakss et al, the ordinary artisan would have found it to be obvious at the time of the invention to attache of the cylindrical fiber lens to each of the optical fibers and method step of gluing the cylindrical lens onto the linear array of light entrance sides of the optical fibers for the purpose of advantageously properly collimating laser radiation from the laser diode array and avoiding the problem of mis-alignment.

As to claims 8 and 17, in Fig. 3, Auria et al teaches that the diameter of the cylindrical fiber lens is chosen to be less than the diameter of the optical fiber to be coupled without loss in coupling efficiency:

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over d'Auria et al, Comerford et al, Dakss et al, and Scifres et al (US 4,818,062).

Art Unit: 2874

Auria et al, as discussed above, fails to use the apparatus for pumping a laser gain medium.

Scifres et al discloses an optical system for pumping a solid state gain medium comprising a coupling of optical fibers to a linear array of lasers and carrying light emitted by the lasers to a solid state gain medium. It is extremely desirable in laser arts to efficiently pump the laser through the laser diode array and optical fibers so as to avoid thermal dissipation in the region of a solid state laser if only the laser diode array is used.

From collective teachings of Scifres et al, the ordinary artisan would have found it to be obvious at the time of the invention to use the apparatus of Auria et al for pumping a solid state laser gain medium, since such apparatus avoids the problem of heat dissipation in the region of the solid state laser and efficiently pumps the laser.

Conclusion

The prior art submitted by applicant has been considered. See attached copy of form PTO-1449.

Since the d'Auria et al, Comerford et al, and Scifres et al references used in the above rejections were submitted by applicant in the prior art statement, no copies thereof are provided with this Office action.

Contact Information

Papers related to this application may be submitted to Group 2874 by facsimile transmission. Papers should be faxed to Group 2874 via the PTO Fax Center located in CP4.

Art Unit: 2874

The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center number is (703) 308-7722.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Hemang Sanghavi** whose telephone number is (703) 305-3484.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Hemang Sanghavi
Primary Examiner
Group Art Unit 2874